

Remarks

This amendment is in response to the Office Action dated May 19, 2003. New claims 27-29 have been added. Claims 18-21 were previously canceled without prejudice, as noted by the Examiner in the Office Action dated Nov. 21, 2002 (paper no 6). Thus, for accuracy, applicant notes that the Office Action Summary page of the May 19, 2003 action should have indicated that claims 1-17 and 22-26 were pending. In view of the present Amendment, claims 1-17 and 22-29 are currently pending. Reexamination and reconsideration are respectfully requested.

Applicant thanks the Examiner for the interview held on 4/22 and conversations on 5/5 and 5/7. Applicant and Examiner discussed the cited Misra reference, the independent claims and the dependent claims reciting a barrier layer. Agreement on the claims was not reached.

Claims 1-17 were rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,960,270 to Misra et al. (hereinafter "Misra"). The rejection is respectfully traversed. To establish a prima facie case of obviousness, the following criteria should be met. First, there should be a suggestion or motivation in the art to modify the reference or to combine reference teachings. Second, there should be a reasonable expectation of success. Third, the reference(s) must teach all the claim limitations. MPEP section 706.02(j). Applicant respectfully submits that the Examiner's citations to the art are insufficient to satisfy the three criteria above and accordingly, the rejection should be withdrawn.

Applicant respectfully submits that the Examiner has cited no portion of the art that describes or suggests "forming a second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer" as recited in claim 1.

The Examiner cited Misra Fig. 11 and considered reference number 108 as showing a "first conductive layer". Office Action at page 2. The Examiner cited Misra Fig. 17 and reference number 128 in an effort to establish that Misra describes "forming a second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer." Office Action at page 3. However, it appears that Fig. 17 of Misra illustrates layer 128b filling the entire region and does not appear to illustrate a gate electrode including "at least the first conductive layer and the second conductive layer" as recited in claim 1. Misra Fig. 17 does not appear to include any portion of reference number 108

because this layer appears to have already been completely removed. Therefore, Misra Fig. 17 appears to indicate that the gate electrode does not include earlier formed conductive layer 108 (what the Examiner referred to as the "first conductive layer") in addition to layer 128b. Since the layer the Examiner referred to as the first conductive layer does not exist in Misra Fig. 17, applicant does not understand how the Examiner can justify the rejection on this basis.

The Examiner further cited Figs. 19-22 in an effort to establish that Misra describes "filling a second conduction layer in the recessed section to form a gate electrode that includes at least the first conduction layer and the second conduction layer." Office Action at page 3. As noted by the Examiner, the steps in Figs. 10-16 of Misra are also used in the embodiment described in Figs. 19-22. The Examiner referred to Misra reference number 108 as a "first conduction layer". As seen in Misra Fig. 16, the entire layer 108 is removed. Fig. 19 shows layer 129, which is a different layer from layer 108. The layer 108, which the Examiner referred to as the first conduction layer, appears to no longer exist when the layer 129 is formed. If the layer that the Examiner refers to as the first conduction layer no longer exists, then applicant does not understand how the Examiner can justify the rejection on the stated basis.

Applicant does not agree with the Examiner's statements characterizing the legal standards regarding the order of process steps. The Burhaus and Rubin cases, as described in MPEP section 2144.04, are grouped under a heading that states "Changes in Sequence of Adding Ingredients." The present process claims relate to methods having steps different than merely adding ingredients. Thus, these cases are not on point. Moreover, the differences between the present claims and the Examiner's citations to Misra are not a mere change in order of steps, but include different steps occurring at different times with different results. Applicant respectfully submits that the Examiner is using improper hindsight to create the claimed invention by selecting individual features from Misra and modifying and combining them in a manner that is not described or suggested in Misra.

Accordingly, in view of at least the above, applicant respectfully submits that the Examiner cited no portion of Misra that describes "forming a second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer" as recited in claim 1, and thus the rejection of claim 1 should be

withdrawn. The rejection of dependent claims 2-6 should be withdrawn for at least the same reasons as claim 1.

With respect to dependent claim 5, applicant respectfully submits that the Examiner has cited no portion of the art that describes or suggests "forming a barrier layer between the first conductive layer and second conductive layer". Applicant is unsure if the Examiner is attempting to cite the photoresist mask described in Misra as a "barrier layer" or that the mask is "between the first conductive layer and the second conductive layer". Applicant respectfully submits that the Examiner cited no portion of Misra that describes forming a barrier layer as recited in claim 5, and accordingly the rejection of claim 5 should also be withdrawn for this reason. In addition, the Examiner's citation rejecting claim 6 does not appear to relate to Misra, as Misra includes no Fig. 2C #60 and no Fig. 2D. See Office Action at page 5. Accordingly, the rejection of claim 6 should also be withdrawn as the Examiner has provided no support in the art for the rejection.

With respect to claim 7, applicant respectfully submits that the Examiner has cited no portion of the art that describes or suggests "forming a second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer" as recited in claim 7. The Examiner cited Misra Fig. 9 (and reference number 36) in an effort to establish that Misra describes "forming the second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer." Office Action at page 5. The Examiner also cited reference number 28 as a first conductive layer. Office Action at page 5. However, Figs. 7-8 appear to show that the entire layer 28b is removed prior to layer 36 being formed. Thus, the Examiner's citations to the art do not appear to describe or suggest "a gate electrode that includes at least the first conduction layer and the second conduction layer" as recited in claim 7. Accordingly, for at least the above reasons, the rejection of claim 7 should be withdrawn. The rejection of dependent claims 8-12 should be withdrawn for at least the same reasons as claim 7.

The rejection of dependent claims 11 and 12 should also be withdrawn for similar reasons discussed above for claims 5-6. The Examiner based the rejection on similar statements and also cited Misra col. 9, lines 55-60, which do not appear to relate to a barrier layer as recited in claim 12.

11 12 13  
14 15 16

With respect to claim 13, applicant respectfully submits that the Examiner has cited no portion of the art that describes or suggests "removing the upper layer to form a recessed section between the sidewall spacers and above at least part of the first conductive layer" and "forming a second conductive layer in the recessed section to form a gate electrode comprising the at least part of the first conductive layer and the second conductive layer" as recited in claim 13. The Examiner cited reference number 108 and Misra Fig. 11 as describing "forming a first conductive layer . . ." The Examiner cited Misra Fig. 16 for "removing the upper layer to form a recessed section . . . and above at least part of the first conductive layer." However, as seen in Misra Fig. 16, it appears that no part of the layer 108 (which the Examiner referred to as the first conductive layer on page 6 of the Office Action) exists in the Figure. Thus, the Examiner's citation does not appear to support his contention.

The Examiner cited Misra Fig. 21 in an effort to establish that Misra describes "forming a second conductive layer in the recessed section to form a gate electrode comprising the at least part of the first conduction layer and the second conduction layer." Office Action at page 6. The Examiner cited reference number 108 and Misra Fig. 11 as describing "forming a first conduction layer . . ." However, Fig. 21 does not appear to show reference number 108 because layer 108 is removed prior to forming layers 129 and 131a shown in Fig. 21. Accordingly, the Examiner's citations do not appear to support his contention. Accordingly, for at least the above reasons, the rejection of claim 13 should be withdrawn. The rejection of dependent claims 14-17 should be withdrawn for at least the same reasons as claim 13. The rejection of claims 14 and 15 should also be withdrawn for similar reasons as described above for claims 5 and 6.

Regarding claim 22, applicant respectfully submits that the Examiner cited no portion of the art describing forming the second upper layer and the first conductive layer from an identical material. The Examiner cited Misra Fig. 12 #108 as describing polysilicon and Misra Fig. 19 #129 as describing metal. Claim 23 recites that the second upper layer and the first conductive layer each comprise polysilicon. However, the Examiner, in rejecting claim 1 (from which claims 22-23 depend) on page 2 of the Office Action, referred to Fig. 14 #120 as the second upper layer. Misra at col. 9, lines 54-55, describes #120 as a plasma-enhanced nitride (PEN). PEN and polysilicon are not identical. Claim 24 recites that the upper portion and the first conductive layer are formed from an identical material. The Examiner, in rejecting claim 7 (from which claim 24

depends), referred to #32 as an upper layer. Misra describes #32 as a TEOS layer. The Examiner's citations do not appear to describe or suggest the subject matter of these claims.

Claim 25 recites forming the first conductive layer from a material comprising polysilicon, and forming the upper layer to include a lower portion formed from silicon nitride and an upper portion formed from polysilicon. The Examiner did not appear to cite any portion of the art suggesting forming an upper layer to include a lower portion formed from silicon nitride and an upper portion formed from polysilicon, as recited in claim 25.

Accordingly, the rejection of claims 22-26 should be also be withdrawn for these reasons, in addition to the reasons for the claims from which they depend.

In the Response to Arguments section of the Office Action, the Examiner cited Misra col. 3, lines 5-17, and Misra Fig. 21, and then stated that "Therefore, Misra shows and describes the recited forming a second conductive layer in the recessed section to form a gate electrode that includes at least the first conductive layer and the second conductive layer." The cited text of Misra describes a structure and not a method. Fig. 21 shows a structure that may be formed using a method described in Misra that is substantially different from that recited in the present claims. Applicant respectfully submits that the Examiner's Response to Arguments section does not supply a reasoned analysis of the elements of each of the claims and how Misra describes or suggests the combination of elements in the claims. Accordingly, applicant respectfully submits that the Examiner has not established a prima facie case of obviousness and the rejection of the claims should be withdrawn.

Applicant has added new claims 27-29 to recite aspects of the invention. Support for the claims may be found throughout the specification and figures. It is believed that no new matter has been entered.

The Office Action also included various comments concerning the art and the non-patentability of features in various of the above mentioned claims. Applicant respectfully disagrees with the Examiner's non-patentability conclusions and characterizations of the art. The discussion above has directly addressed some of those comments and the Examiner's other comments are deemed moot at this time in view of this response.

Applicant respectfully submits that claims 1-17 and 22-29 are in patentable form.

Reexamination and reconsideration are respectfully requested. If, for any reason, the application

is not in condition for allowance, the Examiner is requested to telephone the undersigned to discuss the steps necessary to place the application into condition for allowance.

Respectfully submitted,



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Alan S. Raynes

August 19, 2003  
(Date)